

**REMARKS**

Claims 1-8 and 10, all the claims pending in the application, stand rejected. No claims are amended.

The Examiner has considered Applicants previous arguments and amendments, which were entered on the basis of an RCE, but continues to find the claims unpatentable in view of the previously cited art, and on the basis of a combination of the newly cited patent to Yamamoto and the JP 11-189762 Publication. However, in the Examiner's Response to Arguments, there is a suggestion that with further clarification of the differences, a basis for patentability would exist. Applicants have endeavored to provide such clarification. The Examiner's kind understanding of these differences is respectfully requested.

In addition, as a preliminary matter, Applicants wish to note for the record that the Office Action Summary is not correct, as the listing of claims with respect to the various categories in paragraphs 4-8 are not properly completed.

**35 U.S.C. §102/103 Rejections**

**Claims 1-8 and 10 are rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Nagamoto et al (6,139,953).**

This rejection is traversed for at least the following reasons.

The Examiner states that the rejection is "substantially as set forth in 04/19/06 Office action." The only differences between the current Office Action text and the previous text that we could identify are at page 3, lines 9, 10 and 12, at page 4, lines 9 and 10, at page 5, line 5, and at page 5, line 22-page 6, line 3 of the present Office Action. The additional comments at page 3 explain that the acrylic adhesive of Nagamoto reads on the pressure sensitive adhesive layer as claimed, and clarify that the thickness of the resin layer comprising urethane acrylate oligomer is 100 µm. The change at page 4 clarifies that, in the Examiner's view, the applicant is using urethane polymer and radical polymerizable monomer such as acrylic monomer to form a composite film that is formed of urethane acrylic (urethane acrylate). Finally, the changes to pages 5 and 6 correct grammar and cite case law support.

Thus, given the substantially identical text in the rejection based on Nagamoto, the

arguments set forth by Applicants in the amendment filed on August 21, 2006 continue to be relevant.

However, in the Response to Arguments section at page 10 of the present Office Action, the Examiner provides comments on the Applicant's arguments submitted in the previous Amendment filed on August 21, 2006 and states that the arguments are not persuasive.

#### Base Sheet Structure

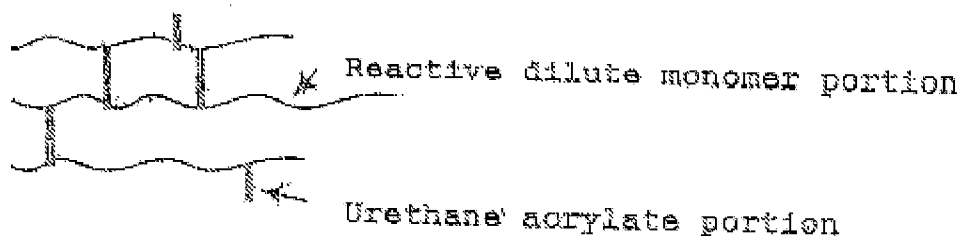
The Examiner acknowledges Applicant's argument that the base sheet in Nagamoto comprises a graft copolymer of urethane polymer and polymer consisting of reactive dilute (diluent) monomers has a completely different structure from that of the composite film of the present invention. The Examiner states that the Applicant "has not explicitly described why the structure of the base sheet (composite film) of Nagamoto is different."

Hereinafter, the differences between the present invention and the prior art as disclosed in Nagamoto et al relied upon by the examiner will be explained. Japanese Application No. 8-059651, which is foreign Application of Nagamoto et al corresponds to JP-A 9-253964 described in "Description of a Related Art" of the specification of this application, on page 3, line 4.

The pressure-sensitive adhesive tape in Nagamoto et al includes a base material which is a film obtained by curing a mixture of a urethane acrylate oligomer and a reactive dilute monomer with radiation. The urethane acrylate oligomer is considered to be a bifunctional (2-functional) urethane acrylate having ester diol as a main skeleton, i.e., a urethane acrylate having introduced therein a reactive double bond at the end thereof. Therefore, the polymer obtained by curing a mixture containing this urethane acrylate is in a state in which the urethane acrylate and acrylic monomer (reactive dilute monomer) are chemically bound. To explain this, reference is made to the following sketches (Figs. 1A 1B). For example, if all the reactive dilute monomers are monofunctional (1-functional), then a polymer as shown in Fig. 1A is obtained, as illustrated below.

Fig. 1A

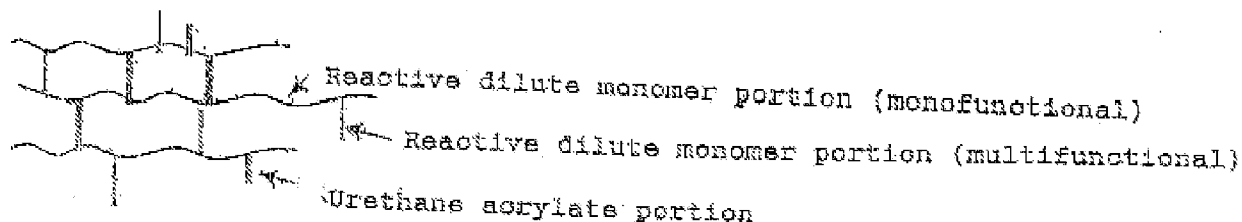
Case in which all the reactive dilute monomers are monofunctional:



If the reactive dilute monomers include both monofunctional and multifunctional monomers, then a polymer as shown in Fig. 1B is obtained, as illustrated below.

Fig. 1B

Case in which reactive dilute monomers contain multifunctional monomers:



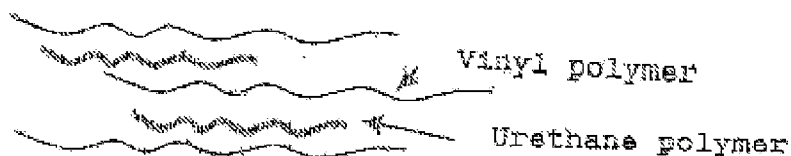
In either case, however, the urethane acrylate and the acrylic monomer (reactive dilute monomer) are in a state where they are chemically bound state to each other.

On the other hand, the composite film that constitutes the multilayer sheet of the present invention is a film that contains a urethane polymer and a vinyl polymer such as an acrylic polymer. In the present invention, the composite film comprised of a urethane polymer and a vinyl polymer and is not chemically bound to the vinyl polymer (that corresponds to the cured product of reactive dilute monomer disclosed in Nagamoto et al. The state of this polymer is shown in the following sketches (Figs. 2A and 2B). For example, if the vinyl polymer is

obtained from monofunctional monomers exclusively, then the obtained polymer is as shown in Fig. 2A, illustrated below.

Fig. 2A

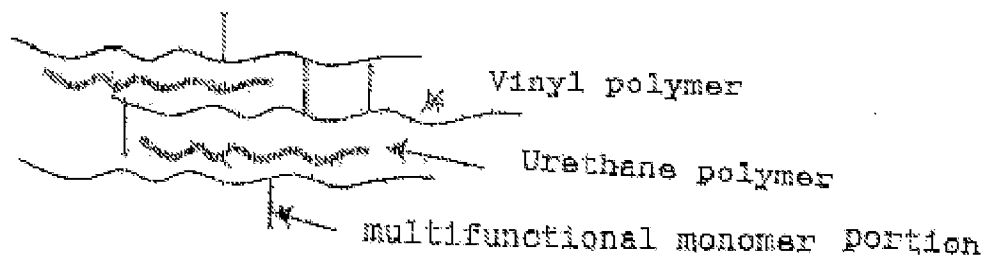
Case in which vinyl polymer is obtained from monofunctional monomers exclusively:



However, if the vinyl polymer is obtained from a mixture of monofunctional monomer and multifunctional monomer, then the obtained polymer has a structure as shown in Fig. 2B.

Fig. 2B

Case in which vinyl polymer contains multifunctional monomers:



In either case, the urethane polymer and the vinyl polymer are not in a chemically bound state.

It is very important whether the urethane polymer and the vinyl polymer (reactive dilute component) are chemically bound. For example, it is well known in the art that a polymer blend of AAAAAAAAAA and BBBBBBBB has different characteristics from a block copolymer of AAAABBBAAABBB, a copolymer of ABABABAB, and a graft copolymer having a polymer molecule of AAAAAAAAAA with a polymer BBB being grafted thereto like a branch have.

Therefore, a composite film that is in a state that the urethane polymer and the acrylic polymer are not chemically bound to each other as described in the present invention and a crosslinked polymer in which the urethane polymer and the vinyl polymer are chemically bound as disclosed in the cited reference have quite different polymerization forms which naturally exhibit different physical properties as films. If, for the purpose of argument, some of the physical properties were assumed to be overlapping between the prior art film and the film of the present invention, only those films that satisfy all the physical properties simultaneously can realize the effects of the present invention reliably.

Next, the base material for adhesive tape in Example 1 of Nagamoto et al is examined. The invention of Nagamoto et al relates to a base material for adhesive tape and the PET film used in Example 1 is referred to as a "support" and is clearly distinguished from a "base material" That is, a support is a material used in the step of preparing a base material. More particularly, to make a film of a mixture containing urethane acrylate, which is a liquid resin, to a predetermined thickness, something that serves as a base or bed is necessary. What is used as such a base (a bed) is a support. It is apparent that after the liquid resin is cured by irradiating, the role of the support is completed and separated and removed from the cured resin (base material for adhesive tape). Further, after careful review of the whole description of Nagamoto et al, Applicants can find no description of the idea that the PET film as a support may exist as a part of the base material. Further, Fig. 1 of the cited reference shows that the base material 2 is a single layer. If the PET film was not separated in Example 1 and is used as a base material, it would become unclear on which side of the base material the adhesive layer should be applied. From the common understanding of one skilled in the art, films having the same thickness are to be used in examples and comparative examples for accurate comparison (since the thickness of the LDPE film as a base material in Comparative Example was 100  $\mu\text{m}$ , the thickness of the base material in the Example 1 must have been 100  $\mu\text{m}$  according to the common sense), the PET film is by no means considered to be included in the base material.

Applicants submit that the words "a composition containing a. urethane polymer and a vinyl polymer" in Claim 1 of this invention are distinguished from the words "a film obtained by curing a mixture of a urethane acrylate oligomer and a reactive dilute monomer with radiation"

of Nagamoto et al and the words “containing urethane acrylate and a reactive diluent” of JP 11-189762.

#### Base Sheet Composition

The Examiner also notes that the base sheet of Nagamoto is formed from a liquid resin containing urethane acrylate and reactive dilute monomer such as morpholine acrylate (Example 1). The Examiner asserts that this reads on the claimed “composite film comprised by a composition containing a urethane polymer and a vinyl polymer as effective components.” The Examiner states that “the obvious difference between the claimed invention and the reference of Nagamoto are not present in the claims.”

#### Laminate Sheet

The Examiner acknowledges Applicants’ argument that Nagamoto does not teach that the based sheet is laminated to the first film and that the Example 1 of Nagamoto shows that the PET film was temporarily used. As a reply, the Examiner cites his comments in the Advisory Action of September 7, 2006, where the Examiner states

According to the Applicant, Nagamoto et al. only teaches a base sheet as a single layer and an adhesive layer laminated to the base sheet. In support the applicant asserts that the Example 1 of Nagamoto et al., the PET film is only used temporarily to form urethane acrylate resin layer and the PET film is removed once the urethane acrylate resin layer is cured. The examiner respectfully disagrees. The examiner finds no evidence or suggestion in the Example 1 of Nagamoto et al. regarding REMOVAL of PET film once the urethane acrylate resin layer on the PET film is cured. In absence of any factual evidence, the said arguments are not found persuasive in determination of patentability. Accordingly art rejections of Nagamoto et al. are maintained.

Given the Examiner’s comments, Applicants submit that there are at least three reasons for a removal of PET film once the urethane acrylate resin layer on the PET film is cured. First, Applicants note that the only illustrations of the invention appear in Figs. 3 and 4, where there is no PET film, thereby clearly indicating that the film is removed. Second, all of the description of the base material properties at cols. 2 and 3 relate to the radiation cured material and not a combination of material and PET layer. Third, Applicants note that in Nagamoto et al, each resin layer obtained in Comparative Examples 1-2 is 100µm in thickness and each resin layer

obtained in Examples 1-3 is 100µm in thickness exclusive of PET film of 38µm in thickness. Based on these Examples, Applicants submit that the PET film was removed after a base sheet has been formed.

Multi-Layer Sheet

Applicants argued that Nagamoto et al. does not teach a three-layer sheet, such as a support with adhesive on only one side, as in the claimed invention. The Examiner did not address this argument. Fig. 3 of Nagamoto shows only two layers while Fig. 4 shows three layers but with adhesive on both sides. This is another basis for patentability.

**35 U.S.C. §103 Rejections**

**Claims 1-8 and 10 are rejected under 35 U.S.C. § 103(a) as obvious over JP 11-189762 (Mori) in view of Yamamoto et al (6,258,426).** This rejection is traversed for at least the following reasons.

Mori

The Examiner asserts that Mori teaches all of the subject matter of claims 1-8 and 10 except for a “pressure-sensitive adhesive layer formed on the other side of the composite film,” where the **composite film** is a cured film substrate made by applying a resin composition [that is considered to be a urethane acrylate (A) and a reactive diluent (B) equivalent to a urethane polymer and a vinyl polymer as claimed] to a separating paper or treated PET film and irradiating the composition, as at page 13, paragraph 0027. At page 6 of the Office Action, the Examiner equates the adhesive sheet substrate such as PET to the claimed “**first film** comprising a material different from that of the composite film.”

The resin composition of Mori (JP 11-189762) contains urethane acrylate and a reactive diluent, therefore the above-mentioned explanation about Nagamoto et al is applied to JP 11-189762.

Yamamoto

The Examiner looks to Yamamoto et al for a teaching of an ultraviolet curing pressure-sensitive adhesive sheet formed on one surface of a **substrate film** and asserts that it would have

been obvious to one skilled in the art to use a pressure sensitive adhesive of Yamamoto as an adhesive layer in the structure of Mori.

In reply, Applicants respectfully note that the claim requires a pressure sensitive adhesive sheet that is a sandwich of a **composite film** in the middle with a **first film** on one side and an **adhesive film** on the other side of the composite film. It is the pressure-sensitive adhesive sheet that has a modulus of 9 N/mm<sup>2</sup> or more and 250 N/mm<sup>2</sup> or less when an oblong piece of the pressure-sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm, according to claim 1. The first film is not an intermediary.

If Applicants understand the Examiner's analysis correctly, he considers the **first film** to be in the middle and the **composite film** on one side and the **adhesive film** on the other side of the **first film**. Moreover, at page 6 of the Office Action, the Examiner states that the first film is PET film or the like, which is an intermediate substrate. This is not the claimed invention. At best, Mori teaches forming an adhesive layer on one or both sides of the curable film (i.e., the composite film), as mentioned at paragraph [0003].

Yamamoto does not remedy these deficiencies, as it does not teach the manufacture of a composite film with a composite film in the middle and a first film on one side with an adhesive layer on the other side. As illustrated in Fig. 1, the structure includes a substrate film 1, a pressure sensitive adhesive layer 2 in the middle and a UV shielding separator 3, as disclosed at col. 3, lines 36-46. This is a different arrangement from the claimed invention. In short, Yamamoto at al does not disclose the composite film of this invention.

Moreover, the differences in arrangement of layers would preclude their combination and certainly would preclude the achievement of the layers set forth in claim 1. It would require impermissible hindsight to arrive at the combination as claimed from the diverse disclosures of Mori and Yamamoto.

In short, Applicants submit that the words "a composition containing a. urethane polymer and a vinyl polymer" in Claim 1 of this invention are distinguished from the words "containing urethane acrylate and a reactive diluent" of JP 11-189762.

Claim 2

The Examiner admits that the properties of pressure sensitive adhesive sheet having a modulus of  $15 \text{ N/mm}^2$  or more and  $250 \text{ N/mm}^2$  or less when an oblong piece of the pressure-sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm are not disclosed in Mori or Yamamoto. However the Examiner asserts that these parameters would necessarily follow from the structure in Mori in view of Yamamoto et al. We note that at paragraphs [0035]-[0036], tensile strength of the materials are disclosed but without discussion of the testing performed.

Applicants respectfully traverse this observation, and rely upon the foregoing arguments for patentability.

Claim 3

The Examiner asserts that there is a teaching of vinyl polymer that is an acrylic polymer. Applicants traverse this observation, and rely upon the foregoing arguments for patentability.

Claim 4

The Examiner asserts that there is a teaching of reacting a polyol and a polyisocyanate in a radical polymerizable monomer to form a urethane polymer, coating a mixture of the urethane polymer and the radical polymerizable monomer on the first film and irradiating a radiation onto the coating to cure it.

Applicants traverse this observation, and rely upon the foregoing arguments for patentability.

Claim 5

The Examiner asserts at page that there is a teaching of radical polymerizable monomer is an acrylic monomer. Applicants rely upon their arguments with regard to the parent claim above.

Claims 6 and 7

The Examiner admits at page 7 that there is NO teaching in Mori or Yamamoto that the

first film has a storage modulus at 25°C of  $2.0 \times 10^8$  Pa or more. At page 7 of the Office Action, the Examiner states that it is reasonable to presume that like materials will have like properties. This assumption is traversed.

Claims 8 and 10

The Examiner asserts that there is a teaching in Mori of first film has a thickness (t1) of 10 µm or more and 200 µm or less and the composite film has a thickness (t2) of 10 µm or more and 300 µm or less, and wherein a ratio of the thicknesses (t1/t2) is  $t1/t2 = 0.1$  to 10.

The only teaching in Mori at paragraph [0027] is of a substrate having a thickness of 1-1000 microns, and preferably 10-500 microns. There is no teaching in Mori of a composite film thickness or a ratio of thickness with respect to a first film and the composite film. At paragraph [0028] of Mori, the adhesive layer alone is described as being usually 1-1000 microns, and preferably 10-500 microns thick. At paragraph [0039], a thickness of adhesive composition is disclosed as being 30 microns. None of this teaching meets the claim limitations.

In Yamamoto, the thickness of the substrate film is generally 10-300 microns, preferably 30-150 microns, and the adhesive layer has a thickness of 3-100 microns, preferably 5-50 microns, as disclosed at col. 5, lines 5-7. The separator film has a thickness of 5-200 microns, preferably 25-100 microns, as explained at col. 5, lines 22-29.

However, there is no teaching in a single reference of both a **composite film** and a **first film**, with a thickness as claimed. Applicants submits that this deficiency precludes obviousness without reliance on hindsight. It is the combination that is being claimed and not simply different and unrelated components or layers. Applicants teach the interaction of the several layers and the impact each has in a combination that is set to achieve a desired performance goal. Only Applicants have described how this result is reached in the multi-layer structure defined by the claims.

**Double Patenting**

**The Examiner provisionally rejects claims 1-8 and 10 on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-16 of copending application 11/358,886.**

Applicants are filing a Terminal Disclaimer with respect to this rejection. Therefore, the Examiner is requested to withdraw this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

*/Alan J. Kasper/*

SUGHRUE MION, PLLC  
Telephone: (202) 293-7060  
Facsimile: (202) 293-7860

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

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Alan J. Kasper  
Registration No. 25,426

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